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The role of analytical customer relationship management in improving the quality of banking service: A case study of the Algerian Agriculture and Rural Development Bank – Bechar Agency

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Abstract--- This study aims to shed light on Customer Relationship Management (CRM) in general, with a particular focus on analytical CRM considering that it is a contemporary marketing concept, and its relationship and the extent of its impact on the quality of service within banking institutions. For that purpose, the research specifically focused on the dimensions of analytical CRM, which consists of customer knowledge, customer value, and customer segmentation. We followed a descriptive analytical approach, utilizing a questionnaire as the primary data collection tool. We distributed 40 questionnaires, of which 38 were suitable for analysis; and through this study, we concluded that analytical customer relationship management affects improving the quality of banking service at the Algerian Agricultural and Rural Development Bank in Bechar.

Keywords--- Analytical customer relationship management, Customer knowledge, Customer value, Customer segmentation, Service quality.

Introduction

In today's global markets, companies face intense competition, making it essential for them to differentiate themselves to secure a strong market position and maximize their market share. To achieve this, businesses must prioritize effective customer relationship management (CRM). By understanding their customers more deeply and catering to their individual needs, companies can tailor their offerings, enhance customer satisfaction, and foster loyalty, ultimately aiming to create lifelong customers—a strategy proven to be more profitable than constantly acquiring new customers.

CRM is typically categorized into two types: operational and analytical. In this article, we will focus on analytical CRM and examine how it contributes to improving the quality of banking services, with a case study of the Agricultural and Rural Development Bank.

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Research Problem:

Based on the preceding discussion, this study seeks to address the following question:
Does analytical customer relationship management (CRM) influence the improvement of service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency?

Research Questions:

- Does customer knowledge impact the improvement of banking service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency?
- Does customer value influence the enhancement of banking service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency?
- Does customer segmentation affect the improvement of banking service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency?

Main Hypothesis:

☞ Analytical customer relationship management impacts the improvement of service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency.

Sub-Hypotheses:

- Analytical CRM positively influences the enhancement of banking service quality.
- Customer knowledge contributes to the improvement of banking service quality at the Algerian Agricultural and Rural Development Bank, Bechar Agency.
- Customer value enhances the quality of banking services at the Algerian Agricultural and Rural Development Bank, Bechar Agency.
- Customer segmentation positively impacts the quality of banking services at the Algerian Agricultural and Rural Development Bank, Bechar Agency.

importance and Objectives of the Study:

This research aims to shed light on the concept of analytical customer relationship management (CRM) and emphasize its importance within institutions. It encourages institutions, particularly service-oriented ones that maintain direct and continuous contact with customers, to adopt this approach due to its critical significance. The study also highlights the role of analytical CRM in enhancing the quality of banking services through understanding customers, segmenting them, and recognizing their value.

Research Methodology:

We have chosen to use the descriptive-analytical method, which involves analyzing and summarizing information related to the subject. This approach was applied to the theoretical aspect of the study. For the practical aspect, we employed a questionnaire as the primary data collection tool. A comprehensive survey was conducted, targeting all employees of the Algerian Agricultural and Rural Development Bank, Bechar Agency.

I. Theoretical Framework:

1- Customer Relationship Management (CRM):

1.1- Definition of Customer Relationship Management (CRM):

Peppers' interest in the concept of customer relationship management dates back to the summer of 1989 (Al-Taie & Al-Abadi, 2009, p. 189). Together with Rogers, he introduced the concept of one-to-one marketing (1:1). While working as an executive at a New York advertising agency, Peppers was tasked, at the last minute, with giving a speech at an American Advertising Federation meeting on the future of media. Due to the limited time available, Peppers focused on two main points. The first was that new media would differ from traditional media in several ways, including:

1. Targeting individuals: Instead of directing advertisements to groups of customers, communication could be tailored to one individual at a time, with a personalized message for each.
2. Two-way communication: There would be a dialogue between the customer and the organization.
3. Affordability: New media would be inexpensive, and in some cases, very low-cost.

The second point made by Rogers was that the rise of this type of media would lead to the decline of mass marketing, which is a strategy of selling standardized products to a large number of customers—essentially, the "one-size-fits-all" approach. This strategy was supported by mass media, which enabled companies to reach millions of consumers with a single message. Early pioneers of mass marketing included companies like Coca-Cola and Ford in the early 20th century (Kumar, 2010, p. 71).

Mass marketing represented the traditional perspective, where the goal was to reach as many customers as possible and expand the customer base. However, the high costs of acquiring new customers led to a shift in focus towards managing relationships with existing customers. The objective of marketing changed from expanding the customer base to deepening the understanding of each customer's needs. Companies began not only to engage with customers to close transactions but also to transform sales opportunities into efforts to build long-term relationships with each customer (Rygielski, Wang, & Yen, 2002, p. 2). This shift is known as one-to-one marketing.

There are four key stages when launching a one-to-one marketing program (Peppers, Rogers, & Dorff, 1999, p15):

- Identify the organization's customers;
- Distinguish them from each other
- Engage in dialogue with them;
- Customize products or services to meet their individual needs.

Personalization and Customization are two types of one-to-one marketing that companies can use to build relationships with customers. Personalization occurs when companies decide on the appropriate marketing mix for each individual based on information gathered about the customer. Customization, on the other hand, occurs when the customer determines one or more elements of their marketing mix. Examples include Dell, which allows customers to customize

and build their own computers, and Dominos.com, which allows customers to design the pizza they prefer. (Kumar, 2010, p. 77).

Customer Relationship Management (CRM) can be defined as a organizational procedure that is meant to better understand and satisfy the customers who have been identified according to their activity and profitability in order to satisfy in better way.this is achieved through various channels of communication in the context of a permanent relationship with the objective of increasing the organization's turnover and profitability. (Alard & Guggemos, 2005, pp. 7-8).

CRM also involves gathering detailed information about customers individually and carefully managing every interaction with them to maximize customer loyalty to the organization (Kotler et al., 2006, p. 180).

CRM is generally divided into two types: analytical and operational. Analytical CRM focuses on aspects such as customer knowledge, segmentation, and value, while operational CRM involves tools like call centers, the Internet, mail, and databases, as well as other multi-channel communication methods, including telephone and mobile (Peelen et al., 2006).

1.2- The Importance of Customer Relationship Management in the Organization:

Kotler provided an example from a textile company that conveyed the following message to its customers: "All our products are guaranteed to provide 100% satisfaction. If you are not fully satisfied, return the goods to us, and we will either replace it or refund your money. We prioritize your well-being and do not wish to offer anything that fails to meet your expectations."

The company further emphasized its commitment to customer satisfaction with posters displayed in all offices, where employees were reminded of the following principles (cherifi, 2015, p. 15):

- The customer is the most important person in the office.
- The customer does not depend on us; we depend on them.
- The customer is not an obstacle to our work; they are the reason for our existence. We are not doing them a favor by serving them; they provide their services to us.

This example highlights the critical importance of retaining customers. All organizations strive to maintain their customer base because they realised that customers represent their true capital; without them, the organization loses its legitimacy.

Dawkins and F. Reichheld emphasize that retaining an existing customer costs five times less than acquiring a new one. A well-designed customer retention program can reduce customer remorse by 8% and reduce reactions by 5% annually, which allows profits to be increased. Additionally, as Reichheld points out, loyal customers tend to purchase in larger quantities and are less sensitive to price fluctuations (Khanshour, 2006, p. 389).

1.3-CRM Objectives:

Customers are the lifeblood of any organization, representing its most valuable asset and a driving force behind economic success. Therefore, organizations must prioritize nurturing strong relationships with their customers, aiming to secure their satisfaction and loyalty while creating value for them. Engaging in meaningful dialogue and valuing diverse perspectives are

crucial elements for establishing long-term relationships with existing customers and continually attracting new ones.

CRM aims to achieve several key objectives (Al-Ta'i & Al-Abadi, 2009, pp. 206-207), including:

- Enhancing and increasing customer satisfaction and loyalty;
- Maximizing the lifetime value of each customer;
- Optimizing the utilization of customer segments;
- Targeting the most profitable customers within the portfolio;
- Increasing the effectiveness and efficiency of customer management.

2- Analytical CRM

Customer relationship is divided into two types, analytical and operational. Below, we will discuss analytical customer relationship management, which involves: customer knowledge, customer segmentation, customer value.

2.1-Customer Knowledge

Effective customer relationship management requires organizations to understand and anticipate customer reactions to adapt their offerings to individual preferences. Research indicates that few institutions truly understand their customers well. To improve customer knowledge, organizations should consider the following aspects: (Hamon, Lézin, & Toullec, 2004, p. 31).

- Identifying current and prospective customers, including strategic and major accounts.
- Determining the types of information that need to be collected.
- Selecting appropriate methods for gathering the information.

The use of new information and communication technologies (NTIC) plays a crucial role in facilitating the process of understanding a large number of customers. Knowledge, in this context, refers to being aware of and understanding something. It encompasses the meanings, perceptions, opinions, experiences, and facts that an individual accumulates through repeated attempts to comprehend the phenomena and things around them.

Effective customer knowledge is essential for developing alignment between the customer and the organization, allowing for improved self-service by customers. For instance, a deep understanding of the customer can enhance productivity and reduce unit costs when utilized correctly, and it can provide long-term returns. It aids in identifying target segments with precision, enabling adapted interactions and relationship-building based on accurate information about the customer or target segment.

An example of the importance of customer knowledge is illustrated by a situation where a company introduced a new light drink that was well received by test participants. Despite their initial enthusiasm and expressed intention to purchase, the product did not perform well in the market after its launch. The company later discovered that customers, who had initially expressed interest, were instead purchasing competing products. This situation resulted in significant costs in terms of lost revenue, reduced customer satisfaction, and diminished employee morale due to the lack of comprehensive customer knowledge (Ibrahimi, 2015, pp. 222-223).

Organizations focused on customer orientation must master the art of managing customer relationships. This is a challenge that requires advanced skills in achieving optimal levels of customer relationship management. To accomplish this, organizations should follow these key stages (Ibrahimi, 2015, pp 223):

- ❖ Collecting data within the organization,
- ❖ Data Classification,
- ❖ Provide access to aggregated data simply from within the organization,
- ❖ Constant exchange of information between employees,
- ❖ Access to knowledge within the process of relational interaction with the customer,
- ❖ continually renewing and improving information,
- ❖ Provide a good platform for the database to achieve knowledge.

2.2- Customer segmentation:

Studying customer behavior is crucial for organizations to understand the characteristics, habits, trends, and needs of their customers. By segmenting the market, organizations can better address the varying tastes and preferences of their customers. Rather than offering a uniform product at the same price and place for all customers, organizations can adapt their offerings to different market segments. Market segmentation helps organizations determine the most effective marketing mix for each segment.

Market segmentation involves dividing the market into distinct segments or sub-segments, allowing organizations to select specific target markets (Hassan, 2001, pp. 18-20). It enables organizations to develop specialized trade policies, tailored production mixes, and customized communication and pricing strategies (Albertini, Helfer, & Orsoni, 2003, p. 166). Organizations can choose from three strategies: targeting all customers with a uniform approach (undifferentiated marketing), focusing on various segments (differentiated marketing), or concentrating on a single segment (concentrated marketing) (Lernould, 2002, p. 47).

The market is divided according to a set of criteria, which we summarize in the following table:

Basic Criteria in Market Segmentation	Examples of such standards
Demographic	Age, gender, job, income, educational level, geographical area, family size, nationality...
Socio-demographic	Family life cycle, social class
Psychographic	Values, Personality, Lifestyle
Socio-psychological	Trends, Motives
Desired Benefits	Tastes, Colors, Security, Excellence and Appearance
SalesAnalysis	Purchase Frequency, Purchase Pattern, Fulfilment

Table (1): Market Division Criteria for Wide Consumption Goods

Source: (Albertini, Helfer, & Orsoni, 2003, p. 167)

2.2.1 - Segmentation Business / Industrial Markets

The term "industrial markets" has been updated to "business markets" in recent marketing literature to encompass not only industrial enterprises but also government institutions and other organizations. The principles of consumer market segmentation are similarly applied to business markets, utilizing variables such as geographic location, desired benefits, and usage rates. Additionally, Bonoma and Shapiro have identified specific variables for segmenting business (industrial) markets, which are detailed in the following table:

Population and Demographic variables	<ul style="list-style-type: none"> • Industrial: Which industries are buying this product and should be focused on?
Operational variables	<ul style="list-style-type: none"> • Company size: What size of companies should you focus on? • Location: What are the geographical areas to focus on? • Technology: Which customer technology should you focus on? • User / Unused Status: Do we focus on non-users? High users, medium or light users? • Customer capabilities: Do we focus on customers who need many services or few services? High users, medium or light users? • Organization procurement function: Are centralized or decentralized companies focused on procurement? • Authority Structure: Do you focus on companies with engineering guidance or financial guidance...? • The nature of existing relationships: Do we focus on companies with which we have strong relationships or turn towards more desirable companies?
Purchase entries	<ul style="list-style-type: none"> • General Purchasing Policies: Are we focusing on companies that prefer leasing? Service Contracts • Procurement Systems: Sealed Tenders: "Confidentiality" .? • Procurement criterion: Do we focus on companies looking for quality? Service or price? • Urgency: Do we focus on companies with fast needs, service, and sudden delivery? • Specific applications: Do we focus on specific uses of our product or all of its uses?
Situational factors	<ul style="list-style-type: none"> • Order size: Are we focusing on large or small orders?
Formal characteristics	<ul style="list-style-type: none"> • do we focus on companies that take risks or those that avoid them? • Attitudes towards risk: Are we focusing on companies that take risks or those that avoid them? • Loyalty: Do we focus on companies that show high loyalty to their suppliers?

Table(2): The main variables of industrial market segmentation

Source: Haddad, S. I. (2006), p 28.

2.3- Customer Value:

The concept of customer value emerged during the transition from the notion of "the customer is king" to the application of scientific methods for identifying the customer's true desires and the added value provided to them. This shift was largely driven by the quality movement, particularly the emphasis on customer satisfaction as a fundamental goal within renowned quality standards. The focus on understanding what constitutes quality, which received significant attention from the 1950s to the 1980s, led to considerable debate over its definition. This controversy prompted researchers to adopt a more nuanced understanding of quality, known as perceived quality, which is seen as a precursor to the concept of value (Ernez, 2009, p. 65). By the 1990s, many researchers shifted their focus from quality to value.

Customer Relationship Management (CRM) is founded on the principle that not all customers are equally profitable. Therefore, it is crucial to identify the most and least profitable customers, a concept known as customer lifetime value (Michel & Petitpierre, 2010, p. 32).

Researchers commonly define customer value based on the ratio between gains (profits) and sacrifices (costs) (Khanshour, 2006, p. 380). The value-based pricing approach assumes that consumer preferences for alternatives are based on their awareness of the value a product provides, which is the difference between total consumer value and total consumer cost (Mahmoudi & Zidane, 2016, p. 52).

3- Bank Services

3.1 -Banking Service Concept:

Banking services are defined as a set of operations with a utilitarian focus, where intangible elements generally outweigh tangible ones. These services are recognized by individuals or institutions for their significance and utilitarian value, addressing both current and future financial and credit needs. They also serve as a source of profitability for banks through a reciprocal relationship between the bank and its customers (Al-Taher & Ben Abdo, 2019, p. 83).

From a descriptive perspective, banking services differ in terms of their marketing attributes. Each service comprises components that may influence a customer's choice of bank. For example, current account services typically include requirements such as a minimum balance, an account opening request, and associated fees. From a marketing standpoint, banking services are a bundle of benefits that fulfill customer needs, such as financial security, the benefits of savings, returns, and streamlined financial transactions (Shrit, 2019, p. 24).

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Banking services are characterized by the following attributes (Abu Moenes & Ghaith, 2020, pp. 361-362):

- **Intangibility:** Banking services lack physical presence compared to other services.
- **Trust:** The provision of banking services relies heavily on trust between the customer and the service provider.
- **Inseparability:** Services are produced, distributed, and consumed simultaneously, necessitating the presence of both the provider and the customer in the same location and time.
- **Perishability:** Banking services cannot be stored and are consumed immediately upon delivery, diminishing over time.
- **Customer Involvement:** The benefit of the service often depends on the customer's active participation in its production and utilization.
- **Homogeneity:** While banking services may vary by institution, their fundamental nature remains consistent.
- **Relative Importance:** The significance and benefits of banking services can vary among customers based on individual needs and priorities.
- **Variance and changeability according to the requirements of the client,** as well as due to the time and place where the service is provided and the service provider, where the method of providing the service varies from time to time even if the provider is the same person.
- **The provision of the service** does not result in the transfer of ownership
- **The banking service** cannot be provided retroactively but rather relates to benefits to be produced in the future.

3.2 -Banking Service Quality Concept:

The quality of banking service can be defined as the bank's capacity to meet or exceed customers' expectations and requirements. According to Gronroos (Al Sarn, 2005, p. 7), quality involves banks striving to enhance their competitive edge by delivering exceptional service that strengthens their market position. Parasuraman conceptualizes quality as the gap between consumers' expectations and their perception of the service provided (Lumanaj & al., 2013, pp. 418-419). Kotler defines it as the characteristics and public image of a service that fulfills customers' implicit needs (Tarzi, 2022, p. 204). Furthermore, banking service quality is often measured by the extent to which banks' services—including digital services, commercial credit cards, withdrawal services, and automated payments—meet customer expectations (Vinnarasi et al., 2022, pp. 1478-1479).

3.3-Dimensions of banking service quality:

Researchers Zeithaml, Berry, and Parasuraman have developed ten fundamental dimensions of service quality based on extensive studies and research. These dimensions are designed to determine service quality from the customer's perspective (Abdel Mohsen, 2006, p. 45).

1. Reliability :

Reliability refers to the ability of a service provider to perform and deliver the service that was promised in the right way the first time and with a high degree of correctness and accuracy.

2. Responsiveness:

It indicates the speed of response of service providers to customer demands, the initiative to help customers and respond quickly to their inquiries, the ability, desire, and willingness of service providers to be permanently in customer service, and their ability to perform service to them when they need it.

3. Competence:

It relates to the competence and merit of service providers in terms of analytical and deductive skills capabilities and knowledge that enable them to perform their roles optimally, that is, the extent to which service providers have the capabilities to provide distinguished services.

4. Accessibility :

It means easy access to service providers and easy contact with them when necessary. This aspect includes not only easy communication, but everything that would facilitate access to the service, such as working hours, the availability of a sufficient number of service outlets, the suitability of the bank's location, and the presence of an appropriate number of ATMs... etc.

5. Credibility:

It means having a high degree of trust in service providers by taking into account the interests and needs of customers, that is, it includes honesty, trust, and reputation in both the bank and the service provider.

6. Communication:

It means the continuous exchange of information with customers regarding the service provided to them with ease, and addressing the customer in the language he understands, and related to the ability of the service provider to explain the characteristics of the service to the customer and the role that the customer must play to obtain the required service.

7. Security:

This predominantly shows that transactions with the service institution are free from suspicion or risk, and reflects the degree of security and confidence in the service provided and in whoever provides it.

8. Courtesy and empathy Courtesy:

It means providing attention, care, and care for the customer service provider, so that he is respectful and polite and is characterized by friendly treatment with customers, and therefore this treatment will generate feelings of friendship, respect and friendliness between the service provider on the one hand and the customer on the other.

9. Tangibility:

It represents the tangible and non-physical aspects, it refers to the appearance of equipment, personnel, level of technology, means of communication, design of buildings, physical facilities, and others.

10. Understanding:

Reflects the effort to identify the customer's needs and adapt the services accordingly, this also includes providing personal attention and easy identification of them. This aspect is integral to enhancing the customer experience. Subsequently, researchers refined the previous dimensions to five key factors for assessing banking quality: tangibility, responsiveness, reliability, empathy, and safety. These dimensions were utilized as mediating variables in the practical study (Bougriga & Zaabat, 2020, p. 144).

3.4-Requirements for the development of banking service quality:

Developing and improving the quality of banking services requires attention to various factors. Among the most significant approaches used in enhancing service quality are the following (Al-Khalidi, 2006, p. 50):

A - Continuous utilization of studies and research:

Many service institutions strive to enhance the quality of their services, but they fail because they do not have a clear understanding of customer expectations. Research is employed as a means of gathering information to understand customer expectations and assess actual service performance. Identifying the role and dimensions of the service, understanding customer expectations, and addressing problems associated with the service are essential components of any effective service quality improvement program.

Research generally helps service institutions achieve the following benefits:

- Understanding service quality standards.
- Assisting management in balancing quality standards.
- Increasing customer satisfaction with provided services.
- Understanding the relative importance of service dimensions.
- Evaluating the actual performance of services in comparison to competitors.

B- Attracting and employing the best competencies:

The results of the studies indicate that about a third of the quality problems are limited to the weakness of the service providers' skills or their lack of desire to work and their low vision of the customer. This aspect is aggravated by the fact that from the customer's point of view, the service provider is the bank itself. Therefore, the bank's management must be keen to select and employ the best elements that will perform the actual offer of banking services.

C- Attention to internal marketing programs:

Just getting the best employees may not enable the bank to achieve outstanding performance, but the employees must have the desire and positive trend towards improving the quality of

service, and the ultimate goal of internal marketing is to motivate the service provider, increase awareness of the importance of the customer and achieve care for them. At the strategic level, internal marketing aims to create an internal environment with a high degree of sensitivity for the customer and the efforts directed towards them.

D-Confirmation of the role of service teams:

One of the prominent requirements for achieving service quality is the existence of so-called service teams: (Service teams), which means the community of workers who can coordinate, work together, and the desire to achieve outstanding performance, and generate a sense of satisfaction among customers.

E- Speed of dealing with customer problems:

The behavior of dealing with customer complaints affects the customers' recommendation to other customers to deal with the service institution, which means that this customer is satisfied with the banking quality provided to them and thus doing free and positive promotion for the benefit of this bank, and vice versa, in the event of their dissatisfaction.

F- Educating the customer about the service:

The bank's credibility with the customer is increased by making concrete efforts to educate them and develop their knowledge of the services available, which increases the customer's ability to make a better decision, and then achieve higher degrees of satisfaction with the services provided.

G- Developing an organizational culture that supports quality:

Achieving service excellence requires that quality becomes a slogan that all bank employees believe in and seek to apply in practice.

3.5- Banking Service Quality Levels:

The position of banking management regarding the quality of banking services can be categorized into five levels (kourtel, 1999, p. 186):

A- **Expected Quality:** This is the quality anticipated by customers, representing the level of quality they believe should be inherent in the banking service.

B- **Perceived Quality:** This refers to the quality that the banking institution considers appropriate to meet customer needs and expectations, and the extent to which the service aligns with customer perceptions of satisfaction.

C- **Standard Quality:** This quality is determined by the service's predefined quality specifications.

D- **Actual Quality:** This is the actual performance of the service, reflecting how bank employees deliver the service following established specifications, which rely on their skills and efficiency.

E- **Promoted Quality:** This involves communicating information about the banking service and its features, including what the bank has promised to deliver to customers through its promotional strategies.

II. Field study

1. The statistical analysis of the study data

The statistical methods used in analysis vary depending on the purpose. The following methods were employed:

- Frequencies, percentages, mean, and standard deviation were calculated.
- Pearson's correlation coefficient was used to measure the internal consistency of the study tool by examining the correlation between individual items and the total score of their respective dimensions, as well as to assess relationships between study variables.
 - Cronbach's alpha was employed to measure the reliability of the study instrument.
 - The Kolmogorov-Smirnov test was used to determine whether the data followed a normal distribution.
- T-tests and F-tests were used in conjunction with multiple regression analysis. The relative responses were assessed using a predetermined scale.

Category Length = (Upper Substitution Limit - Lower Substitution Limit) / Number of Levels = (5-1)/5 = 4/5 = 0.8

Thus, the degree of disagreement is strongly between 1 and less than 1.8, the degree of disagreement is between 1.8 and less than 2.6, the degree of neutrality is between 2.6 and less than 3.4, while the degree of consent is between 3.4 and less than 4.2 and the degree of consent is strongly in the field 4.2 and more.

2- Testing the Validity and Reliability of the Study Instrument

Once the initial version of the questionnaire for the study sample was drafted, it was necessary to evaluate its validity and reliability. A study tool is considered valid if the questionnaire items effectively measure the intended concepts. The validity of the study tool was verified through both face validity and construct validity.

For face validity, the questionnaire was reviewed by a panel of expert professors who provided feedback and recommendations for revisions, leading to its approval in the final form. To assess construct validity, Pearson's correlation coefficient was utilized.

The findings were as follows:

2.1-Analytical CRM dimensions (independent variable)

Table3: Pearson Test Results between CRM Analytical Dimensions and its phrases

Statement number	PHRASES	Correlation coefficient	Sig	Result
1	Badr Bank is interested in keeping all information related to the customer	0,395*	0,017	Statistically significant
2	Badr Bank keeps the customer's email for later correspondence	0,838**	0,000	Statistically significant
3	Badr Bank uses special software to save customer information	0,943**	0,000	Statistically significant
4	Badr Bank seeks to know the characteristics of its customers	0,895**	0,000	Statistically significant
Customer knowledge				
1	The bank is keen on building long-term relationships with the customers	0,342*	0,041	Statistically significant
2	Badr Bank cares about the gains and profits it makes from each customer	0,441**	0,007	Statistically significant
3	Badr Bank provides special treatment to its most profitable customers	0,611**	0,000	Statistically significant
4	BADR Bank strives to maintain the most profitable customers	0,887**	0,000	Statistically significant
Customer value				
1	BADR Bank is studying the market	0,948**	0,000	Statistically significant
2	Badr Bank divides its customers into Segments	0,980**	0,000	Statistically significant
3	BADR Bank provides specific services to each segment	0,945**	0,000	Statistically significant
Customer segmentation				

** Statistically significant at 0.01

* Statistically significant at 0.05

Source: Prepared by the researcher based on the results of the statistical program SPSS V24

The table above indicates that the correlation coefficients for the customer knowledge dimension range from 0.395 to 0.943, which are statistically significant at the significance level $\alpha = 0.05$. Similarly, the correlation coefficients for the customer value dimension range from 0.342 to 0.887, also statistically significant at the significance level $\alpha = 0.05$. Additionally, the correlation coefficients for the customer segmentation dimension range from 0.945 to 0.980, with statistical significance at the $\alpha = 0.05$ level. Therefore, these dimensions are considered valid measures for the intended purpose.

2.2- improving service quality dimension (dependent variable)

Table 4: Pearson Test Results between Service Quality Improvement dimension and its phrases

Statement number	PHRASES	Correlation coefficient	Sig	Result
1	The Bank shall observe international standards for quality improvement	0,624**	0,000	Statistically significant
2	The bank is committed to allocating the necessary expenses to achieve a high quality of services	0.596	0,000	Statistically significant
3	The Bank develops strategic plans that generate new ideas for the quality of services provided	0,513**	0,001	Statistically significant
4	The prices of the services provided by the bank are commensurate with their quality	0,442**	0.007**	Statistically significant
5	The bank tends to work towards obtaining international quality awards	0,911**	0,000	Statistically significant

** Statistically significant at 0.01

Source: Prepared by the researcher based on the results of the statistical program SPSS V24

The table above shows that the correlation coefficients range between 0.442 and 0.911, which are statistically significant at a significance level of $\alpha = 0.05$. This indicates that the dimension of service quality improvement is valid for what it was designed to measure.

3-Reliability of the questionnaire

To confirm the stability of the tool, Cronbach's Alpha was used and the results were as shown in the following table:

Table 5: Cronbach Alpha Lab Test Results

list	The number of statements	Cronbach's alpha coefficient
Customer knowledge	4	0.794
Customer value	4	0.358
Customer segmentation	3	0.955
Analytical CRM	3	0.669
Quality improvement	5	0.606

Source: Prepared by the researcher based on the statistical program SPSS V24

The table shows that Cronbach's alpha coefficient was acceptable for all analytical CRM dimensions, except for the customer value and quality improvement dimension. This indicates that the questionnaire results are reliable, as the alpha value exceeded 0.6. The highest Cronbach's alpha coefficient was 0.955 for the customer segmentation dimension.

4-Descriptive analysis of the field study:

Table 6: Characteristics of the study sample

Description		Frequency	Ratio
Number of workers	From 20 to 30	2	5,6
	Over 30	34	94,4
Age	Under 20 years old	2	5,6
	20 less than 35 years old	8	22,2
	35 less than 50 years old	15	41,7
	50 years and over	11	30,6
Gender	Males	18	50,0
	Females	18	50,0
Current Position	Vice Principal	2	5,6
	Head of Marketing Section	1	2,8
	Commercial Department Worker	6	16,7
	No responses	27	75,0
Education	Intermediate level	1	2,8
	Secondary school education	3	8,3
	Higher education	30	83,3
	Post-gradation	2	5,6
Specialization	Marketing Specialist	5	13,9
	Non-Marketing Specialist	31	86,1
Current Position	Vice Principal	2	5,6
	Head of Marketing Section	1	2,8
	Commercial Department Worker	6	16,7
	No responses	27	75,0

Source: Prepared by the researcher based on the statistical program SPSS V24.

The table reveals that the majority of workers (94%) are aged between 20 and 30, while only 6% of workers are over 30. In terms of age distribution, the largest portion of the sample (42%) falls between 35 and 49 years old, followed by those aged 50 and above (31%). The 20 to 34-year-old group makes up 22%, and the smallest group, under 20 years old, accounts for 5%.

The table also shows an equal gender distribution, with both males and females representing 50% of the sample. Regarding educational levels, the majority of respondents (83%) have a university degree, followed by 8% with a secondary education, 6% with post-graduate education, and 3% with a middle school level education.

In terms of job roles, the largest percentage of respondents (75%) did not specify their position. Of those who did, 17% work in the commercial department, 5% hold the position of

deputy manager, and 3% are heads of the marketing department. Additionally, the table shows that 86% of the sample are not in marketing roles, while 14% specialize in marketing.

5-The respondents' answers regarding the dimensions of the study

The arithmetic mean, standard deviation, will be calculated to analyze the answers of the sample members towards the dimensions of the study, where:

5.1- The sample responses regarding the customer's knowledge dimensions :

Table 7: The sample responses regarding the customer's knowledge dimension

Statement	Degree of Response	Frequency	Ratio	Average	Standard deviation	Ranking
Badr Bank is interested in keeping all information related to the customer	Approve	34	94.4	4,06	0.232	1
	Strongly agree	2	5,6			
Badr Bank keeps the customer's email for later correspondence	Strongly disagree	1	2,8	3,83	0,609	4
	Disagree	1	2,8			
	Neutral	1	2,8			
	Approve	33	91,7			
Badr Bank uses special software to save customer information	Disagree	1	2,8	3.92	0.500	2
	Neutral	3	8.3			
	Approve	30	83,3			
	Strongly agree	2	5,6			
Badr Bank seeks to know the characteristics of its customers	Disagree	1	2,8	3.86	0.424	3
	Neutral	3	8.3			
	Approve	32	88.9			
Customer knowledge dimension				3,91	0,363	approval

Source: Prepared by the researcher using SPSS V24

The table shows that the overall arithmetic mean for the customer knowledge dimension was estimated at 3.91, with a standard deviation of 0.363, indicating a level of agreement. The table also highlights that the highest-ranking statement is statement No. 1, "BADR Bank is interested in keeping all information related to the customer," with an arithmetic mean of 4.06 and a standard deviation of 0.232. Conversely, the lowest-ranked statement is No. 2, "BADR Bank keeps the customer's e-mail to correspond with them later," with an arithmetic mean of 3.83 and a standard deviation of 0.609.

5.2 - The responses of the sample participants regarding the customer value dimension

The table below shows that the arithmetic mean for the statements related to the customer value dimension was estimated at 3.97, with a standard deviation of 0.205, placing it at the agreement level. The results also indicate that the statement ranked first is statement number 2: "BADR Bank is concerned with the gains and profits it achieves from each customer," followed by statement number 3: "BADR Bank provides special treatment to its most profitable customers," with arithmetic means of 4.03 and standard deviations of 0.167 and 0.291, respectively. Meanwhile, statement number 1: "The bank is keen on building lasting relationships with customers," ranked last, with an arithmetic mean of 3.86 and a standard deviation of 0.351.

Table 8: Sample responses at customer value dimension

Statement	Degree of Response	Frequency	Ratio	Average	Standard deviation	Ranking																																										
The bank is keen to build lasting relationships with the customer.	Neutral	5	13.9	3.86	0,351	4																																										
	Approve	31	86.1				Badr Bank cares about the gains and profits it makes from each customer	Approve	35	97.2	4,03	0.167	1	Strongly agree	1	2,8	Badr Bank provides special treatment to its most profitable customers	Neutral	1	2,8	4,03	0.291	1	Approve	33	91,7	Strongly agree	2	5,6	BADR Bank strives to maintain the most profitable customers	Disagree	1	2,8	3,97	0.506	3	Neutral	2	5,6	Approve	30	83,3	Strongly agree	3	8.3	Customer Value dimension		
Badr Bank cares about the gains and profits it makes from each customer	Approve	35	97.2	4,03	0.167	1																																										
	Strongly agree	1	2,8				Badr Bank provides special treatment to its most profitable customers	Neutral	1	2,8	4,03	0.291	1	Approve	33	91,7		Strongly agree	2	5,6				BADR Bank strives to maintain the most profitable customers	Disagree	1	2,8	3,97	0.506		3	Neutral	2				5,6	Approve	30	83,3	Strongly agree	3	8.3	Customer Value dimension				3,97
Badr Bank provides special treatment to its most profitable customers	Neutral	1	2,8	4,03	0.291	1																																										
	Approve	33	91,7																																													
	Strongly agree	2	5,6																																													
BADR Bank strives to maintain the most profitable customers	Disagree	1	2,8	3,97	0.506	3																																										
	Neutral	2	5,6																																													
	Approve	30	83,3																																													
	Strongly agree	3	8.3																																													
Customer Value dimension				3,97	0.205	Approval																																										

Source: Prepared by the researcher using SPSS V24

5.3 - The responses of the sample participants regarding the customer segmentation dimension

The table below shows that the arithmetic mean for this dimension was estimated at 3.76, with a standard deviation of 0.521, placing it within the agreement level. The results also indicate that the statement ranked first is statement number 3: "BADR Bank provides services tailored to each segment," with an arithmetic mean of 3.81 and a standard deviation of 0.525. This is followed by both statement number 1: "BADR Bank conducts market studies," and statement number 2: "BADR Bank segments its customers into different groups," with an arithmetic mean of 3.75 and a standard deviation of 0.554 for both statements.

Table 9: The respondents' answers at the customer's segmentation distance

Statement	Degree of Response	Frequency	Ratio	Average	Standard deviation	Ranking
BADR Bank is studying the market	Disagree	2	5,6	3,75	0.554**	2
	Neutral	5	13.9			
	Approve	29	80.6			
Badr Bank divides its customers into segments	Disagree	2	5,6	3,75	0.554**	2
	Neutral	5	13.9			
	Approve	29	80.6			
BADR Bank provides specific services to each segment	Disagree	2	5,6	3,81	0.525	1
	Neutral	3	8.3			
	Approve	31	86.1			
Customer segmentation dimension				3.76	0,521	approval

Source: Prepared by the researcher using SPSS V24

The following table shows a summary of the results obtained from the descriptive analysis of the analytical dimensions of CRM, where:

Table 10: Summary of the Descriptive Analysis of the Analytical CRM Dimensions

DIMENSION	Average	Standard deviation	Ranking
Customer knowledge	3,91	0,363	2
Customer value	3,97	0.205	1
Customer segmentation	3.76	0,521	3
Analytical CRM Dimensions	3,88	0.299	approval

Source: Prepared by the researcher using SPSS V24

From the table, we notice that the sample members tend to agree on the dimensions of analytical customer relationship management, as the arithmetic mean reached 3.88 with a standard deviation of 0.299, and the customer value dimension comes in first place with an arithmetic mean of 3.97 and a standard deviation of 0.205, followed by the customer knowledge dimension with an arithmetic mean of 3.91 and a standard deviation of 0.363, while customer segmentation comes in last place with an arithmetic mean of 3.76 and a standard deviation of 0.521.

4.5- The respondents' answers on the dimension of improving the quality of service

The table below indicates that the dimension of service quality improvement has an arithmetic mean of 3.57 and a standard deviation of 0.378, reflecting a level of approval. According to the results, the highest-rated statement is Statement No. 2: "The bank is committed to allocating the necessary resources to achieve high service quality," which has a mean of 3.97 and a standard deviation of 0.377. Conversely, Statement No. 5: "The bank strives to obtain international quality awards," ranks lowest with a mean of 3.00 and a standard deviation of 0.828.

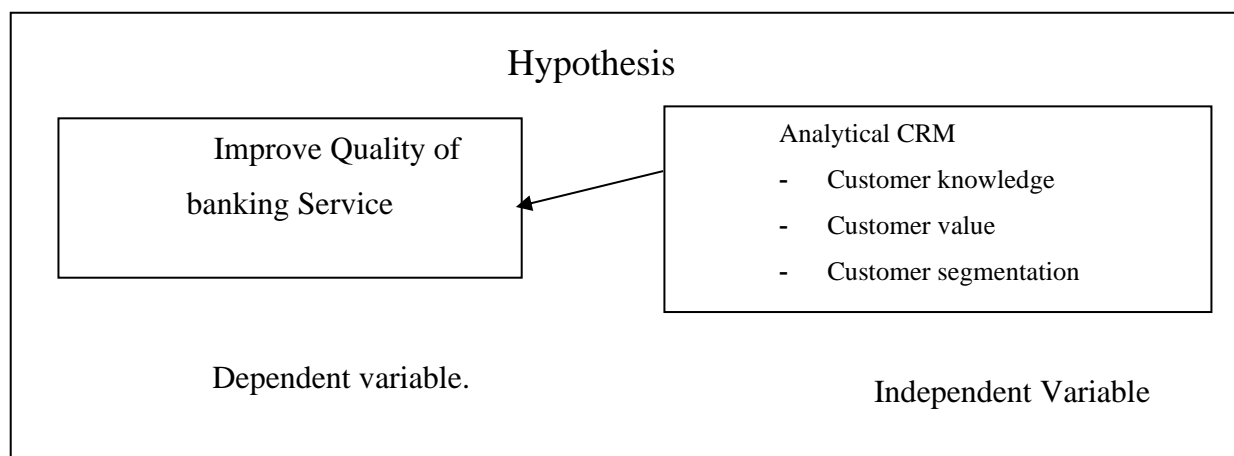
Table 11: Respondents' Responses to the Quality of Service Improvement Dimension

Statement	Degree of Response	Frequency	Ratio	Average	Standard deviation	Ranking
The Bank shall observe international standards for quality improvement	Disagree	8	22,2	3,11	0.785	4
	Neutral	17	47.2			
	Approve	10	27,8			
	Strongly agree	1	2,8			
The bank is committed to allocating the necessary expenses to achieve a high quality of services	Disagree	1	2,8	3,97	0.377	1
	Approve	34	94.4			
	Strongly agree	1	2,8			
The Bank develops strategic plans that generate new ideas for the quality of services provided	Disagree	2	5,6	3.86	0.543	3
	Neutral	2	5,6			
	Approve	31	86.1			
	Strongly agree	1	2,8			
The prices of the services provided by the bank are commensurate with their quality	Neutral	3	8.3	3,94	0.333	2
	Approve	32	88.9			
	Strongly agree	1	2,8			
The bank tends to work for international quality awards	Disagree	11	30,6	3,00	0.828	5
	Neutral	15	41,7			
	Approve	9	25,0			
	Strongly agree	1	2,8			
Quality of Service improvement's dimension				3,57	0.378	Approval

Source: Prepared by the researcher based on the statistical program SPSS V24

6-Testing of study hypotheses:

Figure 1: Study Model



Source: Prepared by the researcher

☞ **Analytical customer relationship management affects the improvement of the quality of banking service in the Bank of Agriculture and Rural Development at the level of significance ($\alpha \leq 0.05$)**

Table 12: Hypothesis Test Results

Model Interpretive Ability		The overall significance of the regression model		Partial significance of regression coefficients			
R	R ²	F	Sig	Regression model coefficients	B	t	Sig
0,625	0,390	6,825	0,001	constant	2,716	2.569	0.015
				Customer knowledge	0.768	4.027	0,000
				Customer value	-0.022	-0.082	0.935
				Customer segmentation	-0.547	-4.089	0,000

Source: Prepared by the researcher using the SPSS V24 statistical program:

Based on the table, we observe that the correlation coefficient value ($R = 0.625$) indicates a moderate correlation between the dimensions of analytical customer relationship management (CRM) and the improvement in banking service quality. Additionally, the coefficient of determination ($R^2 = 0.390$) means that analytical CRM explains 39% of the variations in the improvement of banking service quality, with the remainder being attributed to other factors.

We also note the high significance of the F-test, where ($F = 6.825$, $Sig = 0.001$), which is less than 0.05, confirming the statistical explanatory power of the multiple linear regression model. Furthermore, the regression coefficients reached ($B = 0.768$) for the customer knowledge dimension and ($B = -0.547$) for the customer segmentation dimension. The calculated t-values for these two dimensions were statistically significant, as the Sig values were less than the significance level of 0.05.

It can be said that the regression coefficient for the customer knowledge dimension has a positive significant impact, whereas the customer segmentation dimension has a negative significant impact. However, the regression coefficient for the customer value dimension was not significant in the regression model, meaning it has no effect in our study on improving banking service quality. As for the constant of the equation, its value was ($B = 2.716$), which is significant with ($Sig = 0.015$).

Accordingly, we accept the hypothesis where the analytical customer relationship management affects the improvement of the quality of banking service in the Bank of Agriculture and Rural Development at the level of significance ($\alpha \leq 0.05$)

Conclusion:

This study concludes that analytical customer relationship management—encompassing customer segmentation, customer knowledge, and customer value—significantly impacts the enhancement of banking service quality at the Algerian Agricultural and Rural Development Bank in Bechar. For service institutions, especially banks operating in highly competitive markets, prioritizing customers as their most valuable asset is crucial for long-term profitability. Effective customer relationship management involves a comprehensive approach to gathering and managing customer data, organizing it in databases, and analyzing it to identify key customers. This process enables institutions to better understand customer needs, preferences, and segmentation, and to assess the lifetime value of their most profitable clients using tools from operational customer relationship management.

Key Findings:

- The Agricultural and Rural Development Bank focuses on customer value theoretically rather than in practice.
- The bank analyzes the market and segments its customers to tailor offers and services.
- It provides modern communication channels that allow customers to submit complaints without visiting a branch.
- The bank is committed to enhancing service quality, developing strategic plans, and innovating new services.

Recommendations:

- **Increase Awareness:** Educate institutions and their employees about the importance of analytical customer relationship management and its benefits.
- **Invest in Technology:** Adopt and utilize advanced technologies to improve customer relationship management.
- **Diversify Management Tools:** Implement various tools to manage customer relations and enhance loyalty, such as customer clubs, magazines, dedicated phone lines, and automated response systems.
- **Enhance Marketing Expertise:** Hire marketing specialists or train existing staff to stay updated with the latest marketing trends.
- **Focus on Service Quality:** Prioritize both the quality of service and the quality of customer interactions.
- **Aim for Customer Satisfaction:** Strive to achieve high levels of customer satisfaction and loyalty, which are crucial for long-term relationships.
- **Evaluate Customer Value:** Assess customers based on their lifetime value to better focus efforts on profitable segments and develop effective retention programs.
- **Emphasize Analytical CRM:** Pay attention to analytical customer relationship management aspects, including customer knowledge, segmentation, and lifetime value, to enhance banking service quality.
- **Calculate Customer Lifetime Value:** Identify and target the most profitable customers to concentrate marketing efforts on them.
- **Exceed Customer Expectations:** Offer high-quality services that meet and exceed customer expectations.

- Build a Positive Reputation: Focus on existing customers to create a positive image of the bank, which will help attract new customers.

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